

REMARKS

By this amendment, claim 1 has been amended. Support for the changes to claim 1 can be found, *inter alia*, at page 10, lines 14-25, of the originally-filed application. Claims 4-13 and 15-21 stand withdrawn from consideration. Claims 1-3 and 14 are presented for further examination.

The rejection of claims 1 and 14 under 35 U.S.C. § 102(b) over U.S. Patent No. 5,707,486 ("Collins"); the rejection of claims 1-3 and 14 under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,891,349 ("Tobe") in view of U.S. Patent No. 6,531,031 ("Becker") and JP 11-111494 ("Nobuyuki"); the rejection of claims 2 and 3 under 35 U.S.C. § 103(a) as obvious over Collins in view of Nobuyuki, are respectfully traversed with respect to the amended claims.

Amended claim 1 recites a plasma processing apparatus that produces gas plasma in a vacuum chamber by generating an electromagnetic field so as to treat an object by the plasma, comprising a balanced transmission line that is connected to a high-frequency power supply and that has a terminal thereof used to attain an impedance match. The electromagnetic field is generated by the balanced transmission line. Two parallel conductors constituting the balanced transmission line are horizontal and disposed one above the other. ***Current through the two parallel conductors flow in opposition to each other.***

Collins discloses two leads 77-77 used in a plasma processing apparatus. However, the two leads 77-77 are split conductors from one conductor that is connected to a HF AC source 27. (See Fig. 1 and Column 7, Lines 12-18). Currents through the two leads 77-77 flow in the same direction. Therefore, the two leads 77-77 do not suggest two parallel conductors as defined in amended claim 1. In particular, amended claim 1 recites that current through the two parallel conductors flow in opposition to each other.

Tobe discloses a coil of two turns used in a plasma processing apparatus. The coil of two turns as shown in Fig. 11A is used as a plasma generating electrode 61. (Column 9, Lines 32-38). However, currents through the two turns flow in the same direction, as shown in Fig. 11A. Therefore, the two turns do not suggest two parallel conductors as defined in amended claim 1. In particular, amended claim 1 recites that current through the two parallel conductors flow in opposition to each other.

Neither Becker, cited by the Office Action as teaching “a plasma apparatus wherein an inductive plasma generating coil 6 is fed high frequency power through balanced transmission lines 40 that are balanced by adjusting impedance using capacitors 24-27” (page 4), nor Nobuyuki, cited by the Office Action as teaching “a vacuum chamber 1 wherein a gas plasma is generated to treat an object (wafer 10) by the plasma, by an electromagnetic wave supply system comprising a coaxial track 4 and an antenna 5 (making up the transmission line structure) that is connected to high-frequency power supplies 5, 13” and “that the transmission line structure includes plate 16 (like a terminal) that helps in impedance matching” (page 5), discloses or suggests two parallel conductors as defined in amended claim 1. In particular, neither Becker nor Nobuyuki discloses or suggests that current through two parallel conductors flows in opposition to each other, as recited in amended claim 1.

The rejection of claim 1 on the ground of non-statutory obviousness-type double patenting as obvious over claim 1 of U.S. Patent No. 6,657,151 in view of Collins; and the rejection of claim 1 on the ground of non-statutory obviousness-type double patenting as obvious over claims 1, 4, 8, 11, and 15 of U.S. Patent No. 5,314,603 in view of Collins, are respectfully traversed with respect to the amended claims.

Applicants submit that the obviousness-type double patenting rejections have been overcome by the current amendments to claim 1. In particular, as noted above, claim 1 has been amended to recite that current through the two parallel conductors flow in opposition to each other. Reconsideration and withdrawal of the rejections are respectfully requested.

In view of the foregoing, the application is respectfully submitted to be in condition for allowance, and prompt favorable action thereon is earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #101249.55411US).

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Respectfully submitted,



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